

CHARLES T. DUKELOW.

CARL E. BROWN, "WALKER," EDITOR.

GEORGE L. WALKER.

WALKER'S COPPER LETTER.
(HAROLD CHASE, JR., STAMPS)
\$5.00 PER YEAR.PUBLISHERS
THE BOSTON COMMERCIAL
AND
WALKER'S COPPER LETTER.THE BOSTON COMMERCIAL.
(CONTINUING WALKER'S COPPER LETTER)
\$5.00 PER YEAR.

340 WASHINGTON ST. AND 69 DEVONSHIRE ST.

Copyright 1917, by Dukelow & Walker Co.

BOSTON, MARCH 31, 1917.

WALKER'S SPECIAL MINING LETTER.

RAY CONSOLIDATED COPPER COMPANY.

The stage has been reached in the upbuilding and development of the Ray Consolidated Copper Company at which I desire to go on record as widely as possible as recommending its stock for investment.

This stock never yet has been a prominent feature of the copper share speculation on the New York and Boston exchanges. The company's progress since it became a producer early in 1911 has not been so spectacular as that of many others. Until recently its milling results have been unsatisfactory, and it has been mining and treating ore of materially lower grade than the average of its whole deposit. Therefore it has occupied a place in the quiet shadows while its associates have been enjoying the full glare of the limelight. In the meantime the management has worked out the numerous details of operation and concentration and brought its production up to a volume that gives it the fifth or sixth place in the list of the world's greatest copper mines.

During the closing three months of 1916 Ray Consolidated produced 22,592,906 pounds of copper, that being at the rate of 90,371,624 pounds a year. Its output for the four months ending with January, 1917, was 30,360,569 pounds, or at the rate of 91,081,707 pounds annually. There is now every basis for assurance that the company will be able to produce hereafter at the rate of 100,000,000 pounds or more per annum.

Its production for the last three months of last year was sold at an average price of 26 1/4 cents per pound (eight or nine cents below the price now ruling) and the company's net earnings for the quarter were \$3,592,191, which was at the rate of \$9.20 a year for each of the 1,577,179 outstanding shares. For the full year 1916 the company's profit, as shown by its four quarterly reports, was \$12,339,680, equal to \$7.72 per share, or 26.62% on the price of \$29 for which the stock is now selling.

If Ray Consolidated produces 95,000,000 pounds of copper this year and sells it at an average price of 30 cents per pound, which now seems within the range of reasonable probabilities, it will earn \$12 per share, which will be 40% on a valuation of \$30 for the stock.

When those who habitually invest and speculate in copper mining shares come to a full realization of what Ray is doing I expect to see its stock advance in price and sell at \$50 or higher. I have just completed an analytical investigation of the company's assets and reasonably assured future earning power which convinces me that the real value of its stock at the present time is \$64.12 per share.

Ray has demonstrated by extensively churning drilling its property and by more than 100 miles of underground workings the existence in its property of one great body of ore containing 91,000,000 tons that averages 2.05% copper. This is 41 pounds to the ton of ore, or a grand total of 3,731,000,000 pounds of copper for the whole deposit. After five years of experimentation and mill reconstruction the management has demonstrated its ability to recover 75% of all the copper in the ore. (Mill extraction for the three months ending Dec. 31, 1916, averaged 75.32%.) Three-quarters of all the copper in its 91,000,000 tons of ore is 2,798,250,000 pounds, which is sufficient to provide for an annual production of 103,638,888 pounds for 27 years, which is the length of life indicated by the present volume of ore output, or 116,593,750 pounds annually for 24 years.

A profit of seven cents per pound on 2,798,250,000 pounds of copper is \$195,877,500. Add to this the \$12,000,000 which the company has on hand, already realized and in its treasury, and it appears that Ray Consolidated will distribute to its stockholders during the coming 20 to 27 years, the time depending upon the rapidity with which the ore is mined and milled, a total of \$207,877,500. This is nearly five times the \$45,738,191 for which the company's capital stock is selling in the market.

The market value of \$45,738,191, represented by a price of \$29 per share, includes \$12,000,000 of cash in the company's treasury. Therefore the 2,798,250,000 pounds of recoverable copper, together with mill and mining and other equipment, are selling for \$12,000,000 less than \$45,738,191, or \$33,738,191, which is equal to only one and one-fifth cents per pound. The profit on copper now being produced and sold is more than 20 cents a pound.

My estimate of seven cents profit per pound assumes a cost of eight cents and a selling price of 15 cents, the latter having been the average price of copper for 10 or 12 years prior to 1914. Basis for the eight-cent cost estimate is found in the company's last quarterly report for 1916, President Aldrich having said: "Had usual operating expenses applied to the quarter's operations the per pound cost of copper would have been below eight cents." Including a charge of 12 1/2 cents per ton of ore milled, this for the retirement of development expense, the cost during the last three months of 1916 was 9.769 cents; but wage bonuses were 40% above the regular scale and war prices were being paid for supplies of all kinds.

In the same quarterly report is found the following statement: "Final figures pertaining to this readjustment of ore reserve estimates are not yet available; but they will appear in the forthcoming annual report. In general terms the results will show over 91,000,000 tons of ore reserves remaining on Dec. 31, 1916, the average copper content of which is approximately 2.05%. Up to the date stated considerably over 13,000,000 tons of ore had been mined and accordingly the total ore developed in the property up to the end of the year closely approximates 105,000,000 tons."

That a further considerable increase in Ray Consolidated's ore reserves will result from future development work is certain. The last line of holes drilled at the west end of its big deposit showed that the ore was continuing in that direction with a width of more than 1600 feet and it is a conservative estimate that 15,000,000 to 20,000,000 tons more ore would have been found if drilling had been continued.

Since its mill first went into commission, in April, 1911, Ray Consolidated has mined and treated about 13,500,000 tons of ore, and up to the end of 1916 it had produced and sold about 300,000,000 pounds of copper, the average recovery after smelter deductions having been about 22.25 pounds per ton or only 60% of the copper in the ore.

Although experimental work was conducted constantly and on a large scale and frequent changes were being made in its mill, and although the average grade of the ore treated from the beginning has been only about 1.75%, the company's net earnings for this period were about \$21,000,000, or an average of \$1.55 per ton of ore mined. Until its mill improvements and readjustments had been practically completed the average recovery of values in concentrates must have averaged less than 65% of the copper in the ore. During the last quarter of 1916 the recovery from 1.649% ore averaged 75.32% or 24.84 pounds per ton.

Operating under these extremely adverse conditions, however, the company was able to pay \$8,931,100 in dividends up to the end of 1916 and accumulate a surplus of \$12,000,000. The sum of these amounts, \$20,931,100, representing a little less than the total profits earned, exceeds the total original investment in property, mill, railroad, mining and other equipment, cost of churning drilling, underground development and management expenses. Every vestige of uncertainty as to Ray Consolidated's ore resources, their grade, the ability of the company to mine and mill them economically, to produce copper at a very low cost and earn large and continuous profits has been eliminated and the stock now would be entitled to favorable consideration by investors if it were selling \$20 a share higher.

Unlike most of the other big porphyry mines the ore deposit in Ray Consolidated's property is of lower grade on top, with the bottom two-thirds averaging decidedly richer. The system of mining employed by the company has made it necessary to take out the upper ore first and, in mining it, considerable extensions and fringes of ore not included in the original tonnage calculations have been found. Although this ore is of very low grade, running from 1.50% down to 1.25%, it can be mined and milled at a good profit. Therefore the management has been mining it with the rest and the inclusion of this lean material has kept the grade of the total ore tonnage going through the mill much lower than the average of the whole deposit. Mining development and operations have been so far extended now, however, that an early and substantial increase in the average grade of the ore mined and milled is to be expected. But if the company were to continue on 1.75% ore during the life of the mine its earnings and dividends would make its stock worth more than \$50 a share.

My reason for assuming that Ray Consolidated's 91,000,000 tons of ore will be mined and milled in a period of 24 years, instead of 27 years, is assurance that a further considerable increase in the tonnage milled will occur immediately. As authority for this assumption I quote the following paragraphs from the company's recently issued quarterly report: "The average mill extraction on concentrating ores for the quarter was 75.32% of the total copper contained in such ores. This is the best metallurgical result achieved in the company's history and corresponds to an extraction of approximately 83% of the copper contained in unoxidized form. These results satisfactorily reflect partial benefits from the mill improvements which have been for more than a year and are still as actively in progress as possible in connection with maintaining continuous operation of the mill at full tonnage. During most of the

time while improvements have been under way the mill has been handling considerably in excess of the tonnage it was designed and intended to treat economically, and during the quarter under discussion that excess amounted to approximately 25%. In consequence of treating this excess tonnage it is impossible with the present installation of machinery to grind the ores as finely as they should be ground to permit maximum extractions. Additional grinding machinery was ordered several months ago and will be installed as rapidly as received. The employment of this additional apparatus will result not only in higher recoveries on present tonnages, but will permit of substantial increases of tonnage as desired.

"For more than a year the capacity of the mill has been limited to the amount of power available and at times restricted by lack of power. The original power plant was designed to provide for a milling capacity not to exceed 8,000 tons per day. Over a year ago additional power plant equipment was ordered, but on account of difficulty in securing deliveries from manufacturers, it was only received recently. This equipment will be in operation before the end of January and will bring the power plant up to a capacity adequate for all requirements contemplated in connection with the improved and increased milling facilities heretofore mentioned."

The more rapidly a big deposit of ore like that owned by Ray Consolidated is mined and the copper sold, the greater the profit, figured from the standpoint of amortization. This term has come to signify the greater value of cash in hand than money which is to be obtained at distant future dates. Money in hand can be loaned or invested to earn interest, while, theoretically at least, interest is being lost on the money which will not be received until 10 or 20 years hence. Thus, amortized at 6%, \$1 payable a year hence without interest is worth only 94 cents now, and the amortization tables show that 10 annual payments of \$1 each are worth now \$6.98, while 20 are worth \$10.68 and 24, \$11.68.

The amortization of mining dividends assumes that the receiver of them will use an amount equal to 6% on his original investment and invest the remainder each year at 4%, continuing to reinvest the income on the latter until the mine is exhausted. These investments at 4% meanwhile accumulate and in the end equal the amount paid originally for his stock. If his purchase is made at a lower price than the full amortization value of the stock, however, he will, by following this process, build up a correspondingly larger accumulation than he invested originally.

If the 2,798,250,000 pounds of copper recoverable from Ray Consolidated's ore could be extracted tomorrow at a cost of eight cents per pound and be sold at only 15 cents the resulting profit, plus the company's \$12,000,000 treasury reserve, would be \$131.80 for each share outstanding, and that, of course, would be the value of the stock. Should this operation occupy a period of 27 years, however, it would permit the payment of dividends averaging \$4.88 per share annually which, amortized at 6%, have a present value of \$59.07. This same result accomplished in 24 years would provide for annual payments of \$5.49, having a present value of \$64.12. If the copper can be extracted in 20 years, however, as it undoubtedly will be, earnings, plus cash on hand, will average \$6.59 per share annually, having a present value, as amortized at 6%, of \$70.38 for each share of Ray Consolidated stock outstanding.

Ray Consolidated is in much the same position now that Utah Copper was a few years ago when the market price of its stock was around \$50 per share. I went on record then that Utah Copper shares had a minimum net value of \$89 and I advised their purchase so persistently and repeatedly that many people came to consider me and my advice as jokes and to treat us with gentle toleration. Increase after increase in productive capacity followed, however, and with them came lower production costs, making it necessary for me to revise upward my valuation of Utah Copper stock. The hundreds if not thousands of people who on my advice bought Utah Copper shares at prices ranging from \$30 to \$60 are now receiving all the way from 23 to 47% income annually on their original investments, not to mention the immense price appreciation.

Although no plans have been announced as yet to enlarge Ray Consolidated's mill, such an increase in productive capacity may be looked forward to with confidence. If the price of copper averages 18 to 20 cents a pound for several years after the European war ends, as I expect it to, Ray Consolidated's production undoubtedly will be increased, probably to 130,000,000 and possibly to 150,000,000 pounds annually.

Ray Consolidated has sufficient ore demonstrated already, and its mine is developed and equipped to extract the tonnage essential to an annual production of 150,000,000 pounds of copper. Producing at this rate the company would be enabled to pay \$7.32 per share annually for 18 2-3 years, and such dividends, amortized at 6%, would give its stock a present value of about \$75 a share.

The company's annual report for 1916 will be issued within two or three weeks. Anticipating it for the benefit of the readers of this letter I have compiled from the four quarterly reports which the management issued last year, as has been its custom from the beginning of operations, the figures which appear under 1916 in the following tabulation. The figures for the other years have been taken from preceding annual reports, but some of those for 1916 are partly estimated.

	1916	1915	1914	1913	1912	1911*
Pounds of fine copper produced.....	77,856,813	60,338,936	57,004,281	52,641,229	34,674,275	14,935,047
Tons of ore treated.....	3,332,340	2,848,969	2,427,700	2,365,296	1,565,875	681,519
Pounds of copper secured, per ton of ore.....	23.36	21.18	23.90	22.13	22.14	22.41
Operating expense, per ton of ore.....	\$2.40	\$2.15	\$2.17	\$2.24	\$2.33	\$2.65
Copper cost per pound (cents).....	10.25	9.423	8.763	9.7836	9.83	10.75
Price per pound received for copper (cents).....	25.50	17.352	13.41	15.371	15.76	13.08
Earnings per share, net.....	\$7.72	\$3.02	\$1.64	\$1.84	\$1.30	\$0.19
Balance of quick assets per share.....	\$7.00	\$2.51	\$1.37	\$0.95	\$1.00	\$0.57

*Operated only nine months in 1911.

Comparison of the foregoing figures will show that the company's production has increased steadily from the beginning of operations. The relatively slight expansion in 1914 and 1915 was due to the necessity of curtailing output from the beginning of the European war until the big demand for copper came back in March, 1915. As stated previously mill reconstruction and experimental work, the treatment of abnormally low grade ores and poor (until quite recently) concentration results have been responsible for the small number of pounds of copper recovered per ton of ore and for the much higher cost per pound than the company is now in a position to maintain under normal conditions.

At present Ray Consolidated is paying regular quarterly dividends of 75 cents and 25 cents per share extra, which is at the rate of \$4 per share annually. Therefore the annual income on investments made at \$29 per share is 13.79%. The regular dividends of 75 cents quarterly or \$3 per share annually could be maintained without difficulty on a 13 1/2 to 14 cent metal market and they constitute an annual return of 10% on a price of \$30 a share. Dividends usually are paid on the 30th day of March, June, September and December.

All of the figures presented in the foregoing pages have been compiled with extreme conservatism and numerous factors have been omitted which if included would have made it possible for me to arrive at valuations for the company's stock \$10 per share higher than those given.

A constant study of the metal market for 18 years past, during which time I have noted all the price fluctuations and analyzed the reasons for them, satisfies me that the average price of copper during 20 years following the termination of the European war will be at least 17 cents a pound, or two cents higher than that used as a basis in computing the future earnings of Ray Consolidated and the value of its stock.

From information I have gained on my visits to the property and study of its maps and records I am well satisfied in my own mind that Ray Consolidated will mine and mill from the beginning to the end of its operations, not simply 105,000,000, but nearer 150,000,000 tons of ore. I believe also that the average grade of the ore will be higher rather than lower than 2.05% copper.

Another asset of great importance will be the immense pile of tailings which is accumulating below the mill. Altogether the company should be able to recover and retreat at least 90,000,000 tons of tailings at a profit of approximately \$50,000,000, or more than \$30 additional for each share of its stock.

Still another asset deserving consideration is Ray Consolidated's "Development of properties" account, which a year ago amounted to \$4,076,250. This represents money expended in past years to prove its ore bodies and develop its mine. It is being recovered gradually even now as cash by means of a charge of 12 1/2 cents against every ton of ore mined before the cost of copper is arrived at. Thus, when the cost of copper is stated as eight cents per pound it means that its actual cost for the year alone is about one-half cent lower. This charge of 12 1/2 cents per ton therefore covers up another \$2.50 per share that could have been included in figuring the value of the stock.

No allowance has been made in the foregoing for interest on its \$12,000,000 surplus. About \$3,000,000 of this will be required for working capital, and 5% on the remaining \$9,000,000 would amount to \$450,000 annually.

The shares of all the established copper producing companies are selling abnormally low just now and I am convinced that Ray Consolidated is the cheapest one of the lot. I do not believe that it will be possible for much longer to purchase this stock at a lower price than \$40 to \$45 a share. Therefore I have taken this opportunity to present the record and assured future prospects of the Ray Consolidated Copper company. I advise the purchase of this stock for investment and also as a speculation.

GEO. L. WALKER.